CAME GROUP

URBACO

AUTOMATIC BOLLARDS

INSTALLATION AND MAINTENANCE GUIDE FOR STANDARD MICRO TECHNICAL CENTRES Article Code: CCE0011PU

THIS MANUAL IS INTENDED FOR FOREMEN AND TECHNICAL STAFF IN CHARGE OF THE INSTALLATION, OPERATION AND MAINTENANCE OF THIS PRODUCT.

ELECTRIC SHOCK HAZARD

Do not spill oil! The technical centre should be kept upward because it contains an oil compressor. Read notice carefully before activation.

Pictures are not contractual

NT-CCE0011PU(V1-EN) – V1 – 12/06

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User's manual for the URBACO U200 and U201 control boards

User's manual for basic horizontal oil-lubricated compressor

1. GENERAL FEATURES

The U200 micro-technical centre with oil compressor is intended for the operation of URBACO pneumatic retractable bollards.

Remote controls, to be ordered separately, will actuate the bollards down.

The number of bollards is limited on the one side hand by the maximal power released by the U200 control board (4 solenoids max.) and on the other side by the compressor capacity to supply air to the bollards (see table chart in compressor notice).

As an option, the technical centre can run a 2nd access.

The cabinet containing the technical centre is made of metal; its base has been bored in advance (cable gland).
It is designed for wall mount with anchor clips (supplied).

1.1. Introduction:

The cabinet is naturally ventilated.
As a standard, it integrates a perforated grid on which the U200 case is fixed (1) ; the compressor is positioned in the lower part of the cabinet (2) and as an option, the add-on card for the 2nd access, the heater, control actuators built-in and operation logic apparels.

1.2. Mechanical specifications (cabinet):

Dimensions: Height 600 x Width 400 x Depth 250
Working depth: 230mm
Material: Steel
Thickness: 1.5mm
Weight: ~28 kg
Surfacing process: Phosphatation, neutralisation, passivation, neutralisation and polyester coating of 60µm by electro-static powdering.
Protection degree: IP 44
Shock index: IK 10 (1kg at 50cm)
Insulation: Class I
Ventilation: natural
Door: 1 plain steel door
Closing: handle with 2-point lock and key (Ref. N°2 433A (2 keys are supplied)
Maximal load with anchor clips supplied: 100kg

Behaviour of cabinets depending on their surroundings

Inside			Outside					Environment				
Dry	Humid	Very Humid	Rural	Urban	Industrial	Tropical	Marine	Cold	Very cold	Temperate	Hot and dry	Equatorial
Excellent	Excellent	Good	Excellent	Very good	Very good	---	---	Very good	---	Excellent	Excellent	---

1.3. Electrical specifications:

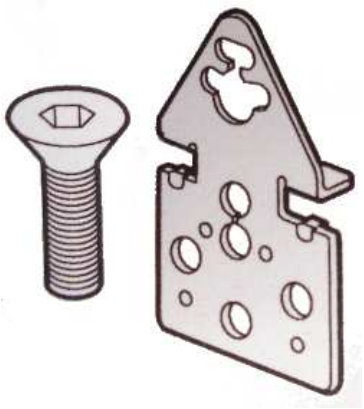
Voltage: 230V 1-phased 16A + Earth
Power: about 500W
Operation intermittence: 50%
Ambient temperature outside: -10°C (with heating sy stem, available on option) to +40°C

Caution! It is of paramount importance that the micro technical centre is earthed before being activated.

1.4. Contraindications:

The U200 micro technical centre and its basic compressor are designed for non-intensive use. The maximum duration of non-stop operation is 15 minutes, followed by a pause of 15 minutes.
This system is suited for the management of control actuators by dry contact, of URBACO limit switches, of induction loops and of compressor surveillance.

2. HOW TO INSTALL THE TECHNICAL CENTRE

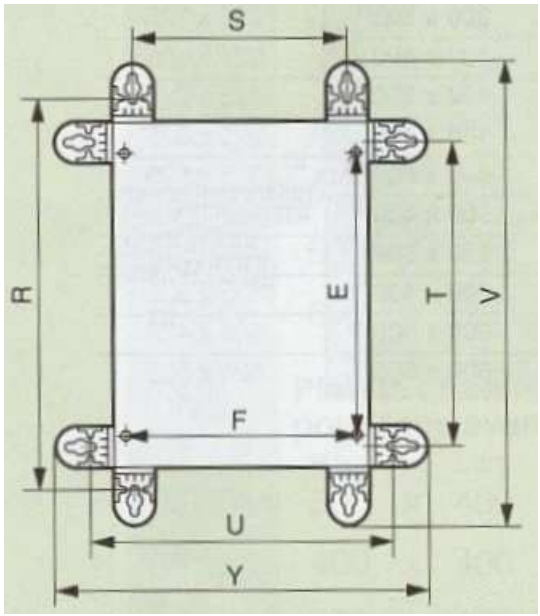


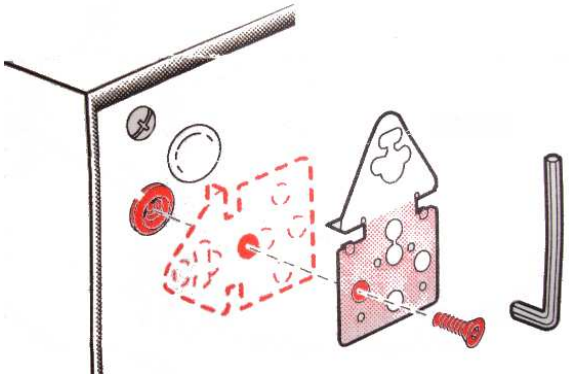
Use the set of 4 x wall-mount pegs supplied.
Place the cabinet indoor or outdoor against a wall (garage, technical shed/room…) as close as possible to the access site.

Even if the level of noise is low (< 50 dB), the installation of the technical centre is not to be envisaged inside an office where people are meant to be working.

Some cabinets have thermal insulation.
Leave enough room around the cabinet to ensure proper cooling.

The door must be locked with a key and kept out of the reach of children.





Wall-mounting
is ensured with 4 x pegs screwed on the cabinet, either horizontally or vertically, but in any case the cabinet must be positioned vertically. The pegs are fixed to the wall with concrete anchors (or similar), not supplied.

Cabinets		Vertical pegs		Horizontal pegs		Cabinet + Pegs	
Height (mm)	Width (mm)	R(mm)	S(mm)	T(mm)	U(mm)	V(mm)	Y(mm)
500	400	550	350	450	450	602	502
600	400	650	350	550	450	702	502
600	600	650	550	550	650	702	702

3. CONNECTION AND ACTIVATION OF THE MICRO TECHNICAL CENTRE

Before operating, make sure the compressor filter is duly positioned.
The compressor is not delivered ready for use (see compressor manual).

Once all the wiring is done and all flexible tubing is connected, to/from the bollard to/from the cabinet, proceed as follows for activation (see technical data sheet for Micro Technical Centre for connections).

For reasons of safety, the cable for power supply cable will be connected at the last moment by a professional electrician. A 30 mAmp ground fault circuit interrupter must be installed.

It is imperative that the City3 controller be earthed.

All connections must be done with power TURNED OFF.

For the first activation, it is strongly recommended to close the access location with appropriate means to prevent vehicle driving through. This is to avoid any hazard or accident in case something is not properly connected.

3.1. Programming and tuning:

Programme the U200 control board as per requirements **(see §4 in the U200 manual).**

3.2. 1st Energization:

Turn compressor ON.
If loops have been laid around the bollard for safety reasons, remove any metallic object if placed over the loops so as not to disturb the detector.

Energize the micro technical centre and look around to check the bollard perimeter (nobody and no vehicle around).

Program radio transmitters*.

Reset detector to initialize it* (no metallic object should be placed over the loops during the process.

*: depending on equipment within the technical centre.

See §5 in the U200 manual to proceed with operation tests.

All safety functions must be controlled with all due attention.

Once the operation has been validated in real conditions (with vehicles driving through), access site may be opened for traffic.

CAME GROUP

URBACO

ISO 14001

AUTOMATIC BOLLARDS

USER'S MANUAL – URBACO U200 & U201 CONTROL BOARDS
Article Code: 002ZU200
Version V4

THIS MANUAL IS INTENDED FOR FOREMEN AND TECHNICAL STAFF IN CHARGE OF THE INSTALLATION, OPERATION AND MAINTENANCE OF THIS PRODUCT.

ELECTRIC SHOCK HAZARD

Pictures are not contractual

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1. PRESENTATION

1.1. General features:

This manual describes the setup and operation of the CAME U200 Version V4 automation board intended for the management of URBACO's pneumatic-driven automatic retractable bollards.
As a standard the case consists of the U200 motherboard which runs I access and of a mains transformer. Using the optional U201 add-on-card connected to the U200 makes it possible to run a 2nd access.
The detectors/sensors for the safety loops may be built in the case depending on operating logic mode chosen.
The U200 board has a socket designed for CAME plug-in boards. Programming the board depending on operating mode selected is done with switches and with a potentiometer. Finally, 4 x LEDs give indications on the status of some functions.

Directions for the good use of an access site controlled by automatic retractable bollard(s)

SAFETY RULES FOR THE GOOD USE OF AN ACCESS SITE CONTROLLED BY AUTOMATIC RETRACTABLE BOLLARD(S)

So as to ensure the good operationality of the access, for safety reasons URBACO recommends:

- **To set up vertical signposts warning of an obstacle («retractable bollard») ahead.**

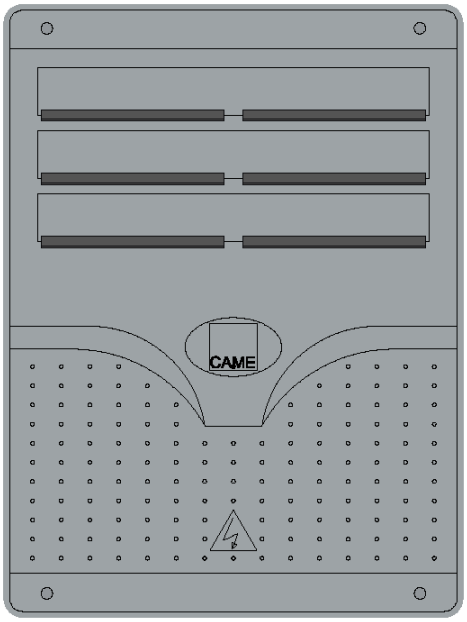
For access control systems, URBACO recommends that vehicle **be obliged to stop before the bollard and wait for its complete retraction underground** (and for the light to turn from red to flashing amber if the access site has position lights) **prior to driving on.**

For access sites programmed with bollards automatically rising once a vehicle has passed, following vehicles **must not try and drive through the access site one after the other without each stopping before the bollard, making sure it is retracted and respect signal given by position light (if such a device has been installed).**

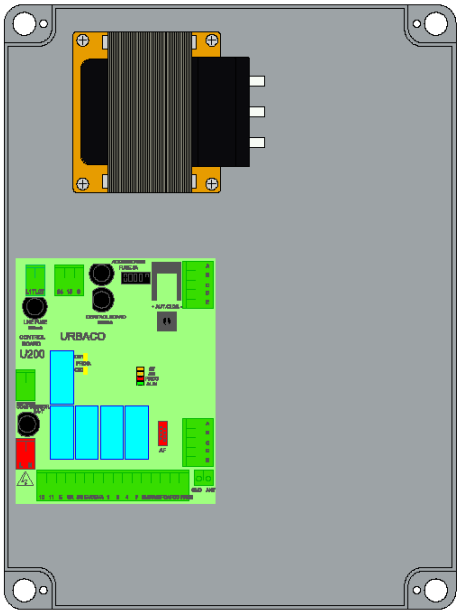
INFORMATION AND TRAINING OF USERS

The person(s) in charge of the access site is (are) bound to inform users on how to operate and utilise the access. URBACO will not be held responsible for any damage due to mishandling or to disrespecting safety rules.

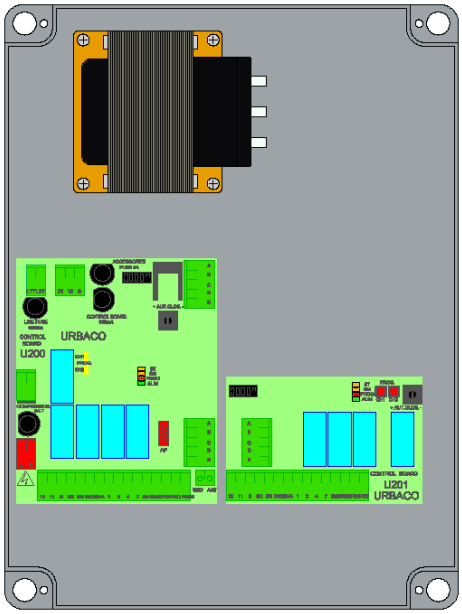
1.2. Case layout:



Case closed



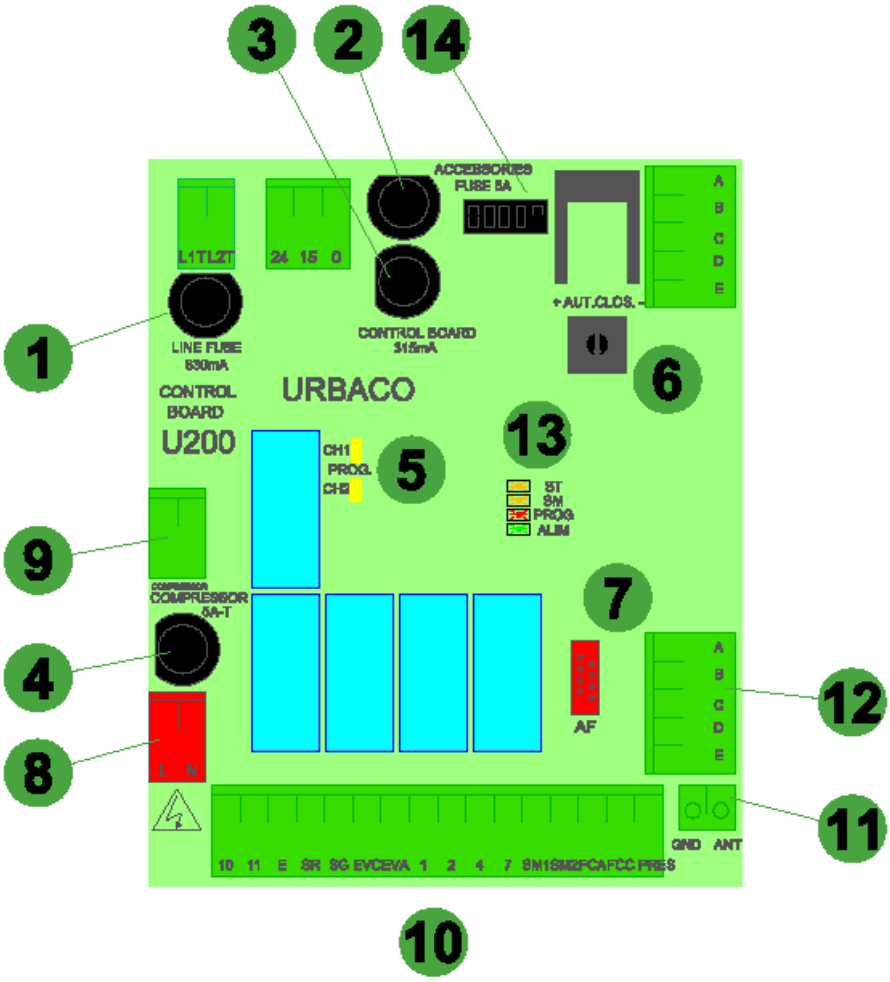
Case with U200 board



Case with U200 board and U201 add-on-card

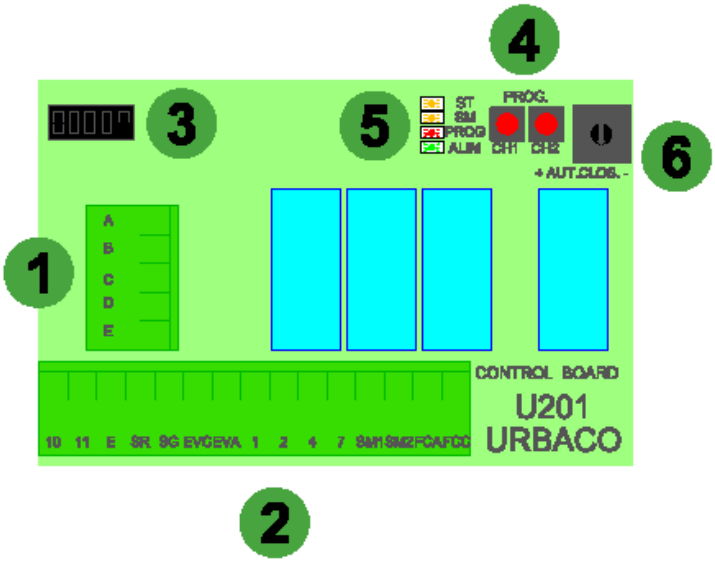
1.3. Description of the U200 motherboard and U201 add-on-card:

1.3.1. The U200 motherboard:



1. Fuse: Line 630 Ma
2. Fuse: Accessories 5A and solenoid valve
3. Fuse: Motherboard 315 mA
4. Fuse: Compressor 5A T
5. Programming switches for CH1 and CH2 radio transmitters
6. Time control setter before automatic rise
7. Sockets for CAME plug-ins: AF43S, AF43SM, AF43SR, AF30, AF150
8. 230V mains supply terminal
9. 230V compressor supply terminal
10. Terminal strip
11. Radio antenna terminal
12. U201 junction terminal
13. LED status indicators
14. Programming switches

1.3.2. The U201 add-on-card for 2nd access



1. U200 junction terminal
2. Terminal strip
3. 2nd access site programming switch
4. Programming switches for CH1 and CH2 radio beepers
5. LED status indicators
6. Time lapse relay before automatic rise

2. TECHNICAL SPECIFICATIONS

General specifications:

Case:	:	ABS plastic
IP:	:	IP 54
IK:	:	IK 8
Cable input:	:	4 inputs for PE Ø10 (not supplied)
Weight:	:	3.5 kg // 7.7 lbs
Dimensions (H x L x D):	:	320 mm x 240 mm x 150 mm // 12.6 x 9.44 x 5.9 in.

Electrical specifications:

Supply tension:	:	230 V, 1-phase
Consumption:	:	<1A (U200 only)
Frequency:	:	50 Hz
Electrical insulation:	:	Class II Class I (open case)

Specifications:

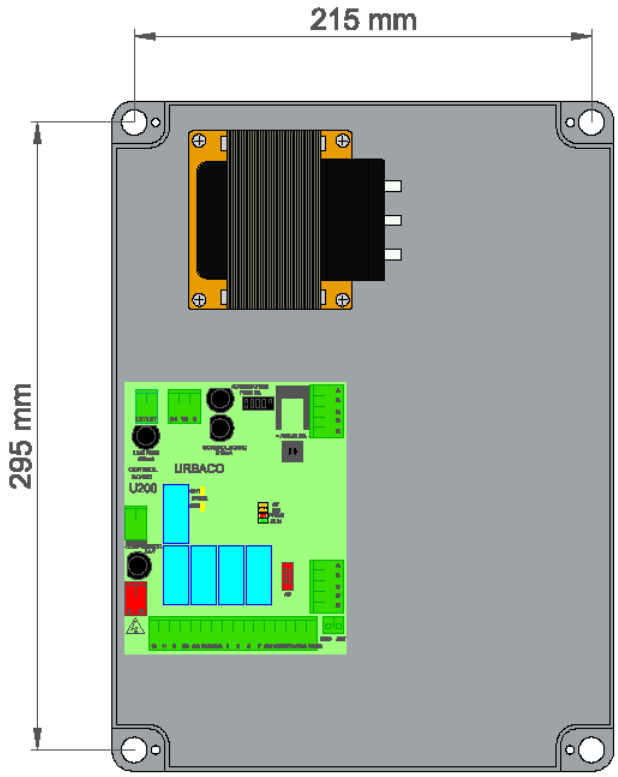
URBACO U200 and U201 control boards permit:

- From 1 to 4 automatic retractable bollards for the pneumatic version
- Management of upper and lower limit switches by URBACO
- Management of induction loops via 1- or 2-way detectors (depending on operating logic mode)
- Compressor surveillance
- Management of external controllers by dry contact
- Operation of 4 solenoid valves (as supplied by URBACO)

A maximum power of 20W is available on Solenoid Valve output.
The U200 and U201 control boards do not have any diagnose for operation faults except for compressor surveillance.
Limit switches are compatible but no default may be detected or diagnosed.

3. INSTALLATION AND CONNECTIONS

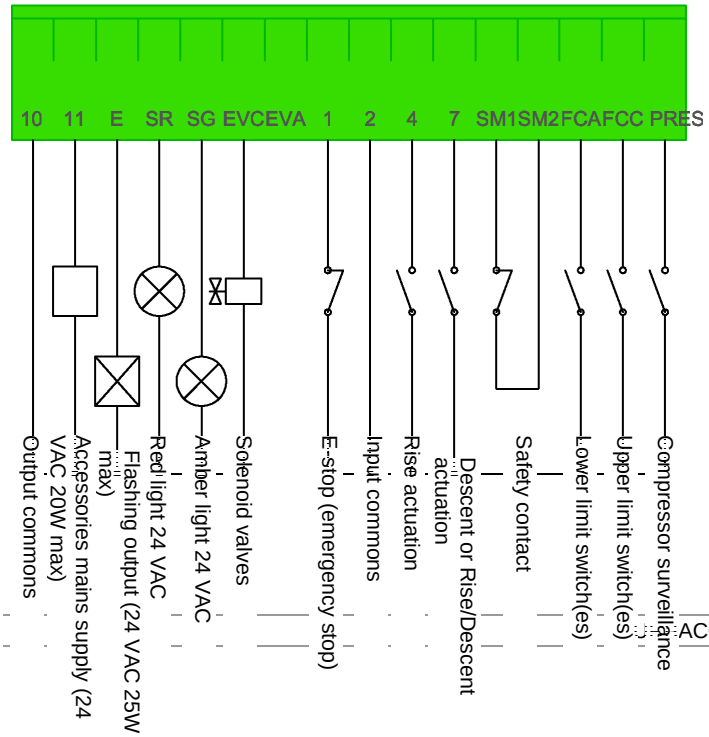
3.1. How to fix the case:



This case is suitable for wall-mount inside any premises or built in a cabinet or CITY-type controller
215 mm = 8.46 in
295 mm = 11.61 in

3.2. How to connect the U200 motherboard and U201 add-on-card for 2nd access:

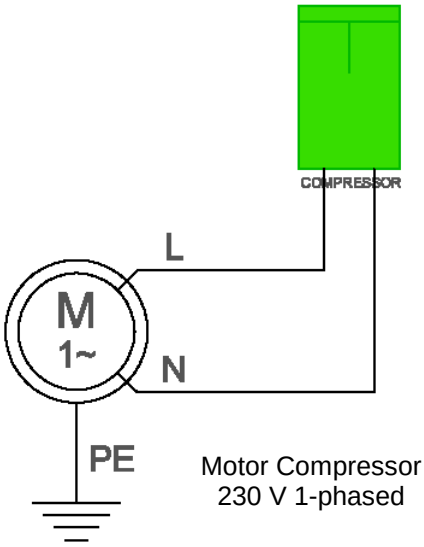
3.2.1. How to connect the bollard and its accessories:


10 11 E SR SG EVC EVA 1 2 4 7 SM1 SM2 FCA FCC PRES
Output commons
Accessories mains supply (24 VAC 20W max)
Flashing output (24 VAC 25W max)
Red light 24 VAC
Amber light 24 VAC
Solenoid valves
E-stop (emergency stop)
Input commons
Rise actuation
Descent or Rise/Descent actuation
Safety contact
Lower limit switch(es)
Upper limit switch(es)
Compressor surveillance

When several bollards are present on 1 access, apply parallel connections for solenoid valves and series connections for limit switches. Compressor surveillance is not available on U201 add-on-cards.

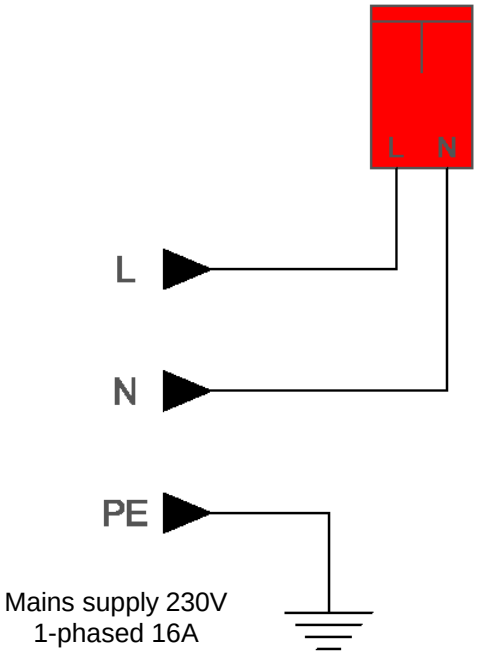
The upper limit switch is not compulsory (programming) but highly recommended for the optimal management of bollards

3.2.2. Connecting the compressor:



This supply terminal permits to disconnect the compressor in case of extensive use if the compressor surveillance contact is connected.

3.2.3. Connecting mains supply:

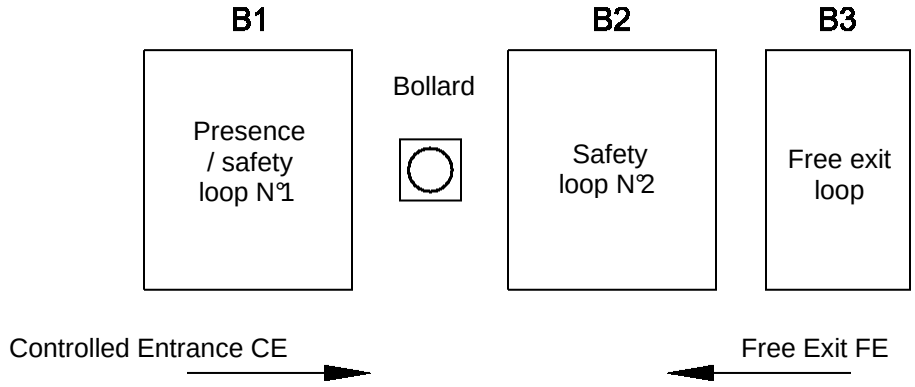


Obligatory use differential protection 30mA for 230V 16A power supply.
Earth/ground wire of power supply must be connected to all components with earth/ground connectors.
The controller metal body must be earthed/grounded when the U200 not protected with cover.

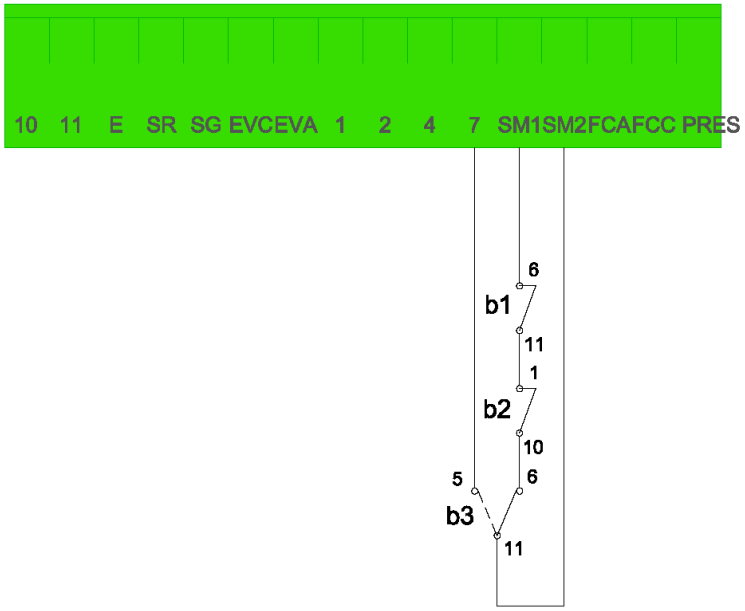
3.3. How to connect the operation logic system:

3.3.1. Controlled entrance and free exit:

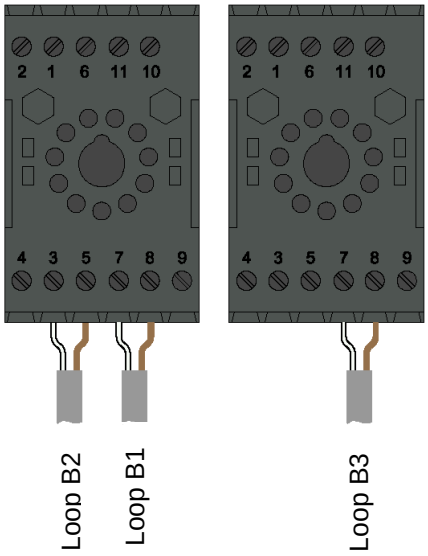
a) Installation of loops:



b) Connecting the detector contacts (sensors):



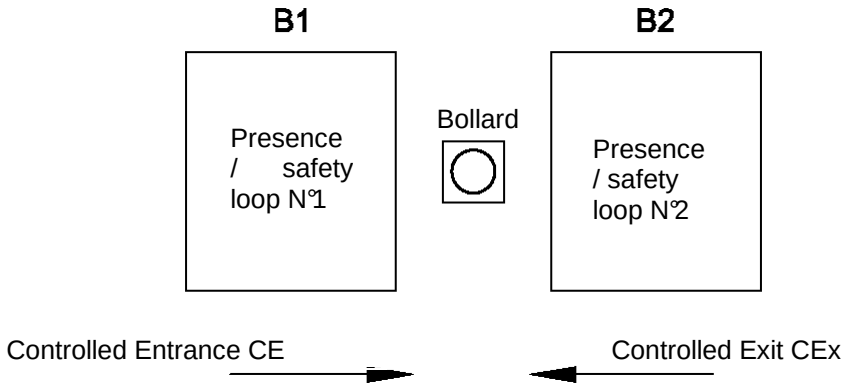
c) Connecting the loops:



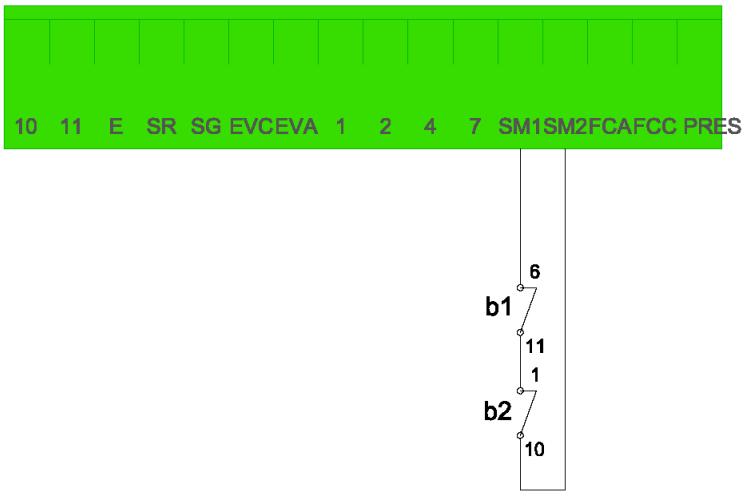
D1: 2-way safety loop detector (B1 and B2)
D2: 1-way free exit loop detector

3.3.2. Controlled entrance and exit:

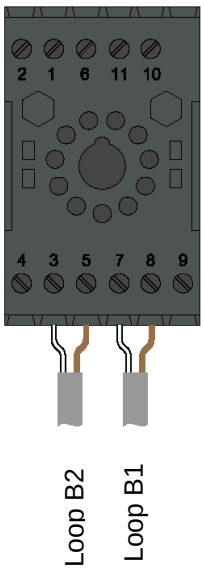
a) Installation of loops:



b) Connecting the detector contacts:



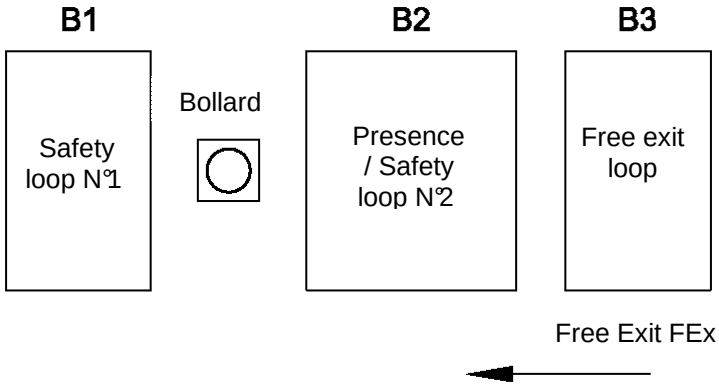
c) Connecting the loops:



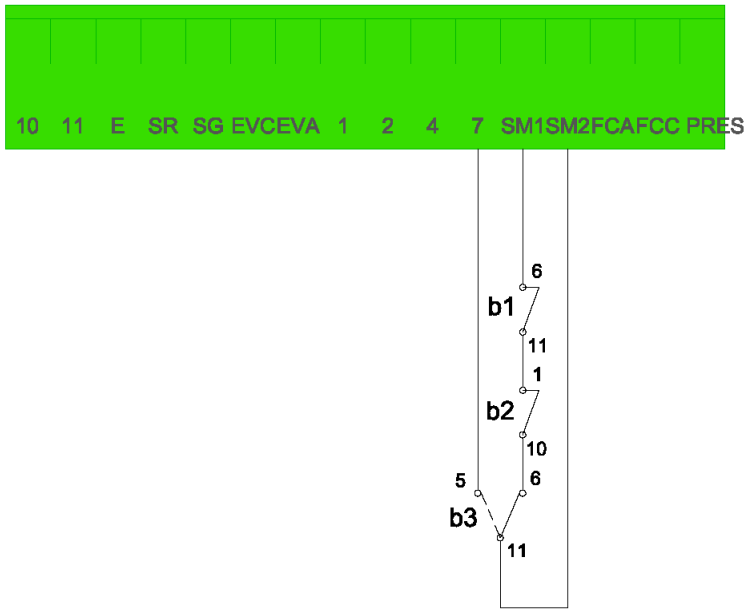
D1: 2-way safety loop detector (B1 and B2)

3.3.3. Free exit:

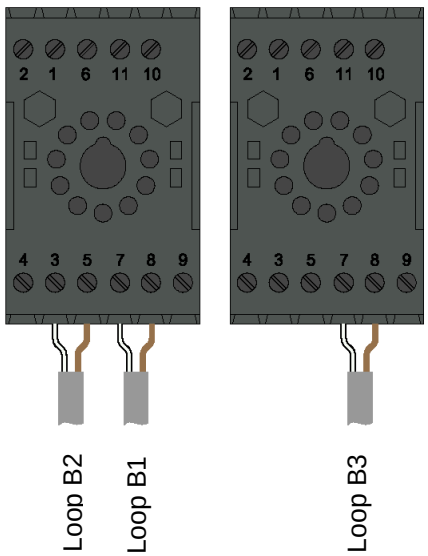
a) Installation of loops:



b) Connecting the detector contacts:



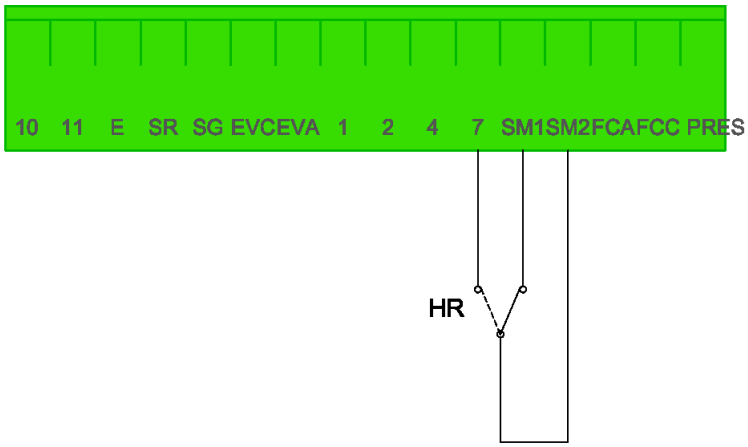
c) Connecting the loops:



D1: 2-way safety loop detector (B1 and B2)
D2: 1-way free exit loop detector

3.3.4. None:

3.4. How to connect an external timer:



4. PROGRAMMING AND TUNING

Programming can be done using 5 switches:

SW1 Automatic or manual operated (ON – or – OFF)
ON: Bollard automatically rises once the safety loops (SM1/SM2) are cleared and after time range set by potentiometer.
OFF: The bollard does not rise even when the safety loops (SM1/SM2) are cleared; waiting for actuation by control (See SW2)

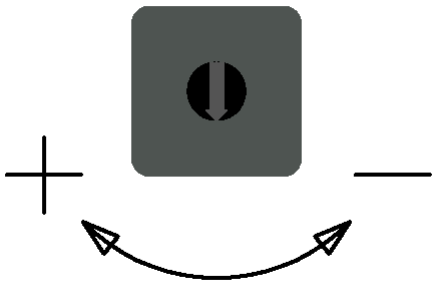
SW2 Control actuator (descent –or– rise/descent)
ON: Actuation of rise on input N°4 and descent on input N°7
OFF: Actuation of rise / descent on input N°7

SW3 Warning before rise (YES –or– NO)
ON: 3 seconds' notice before bollard rises
OFF: Warning deactivated

SW4 Type of solenoid valve
ON: Bi-stable solenoid valve
OFF: URBACO mono-stable solenoid valve

SW5 Descent actuator (with –or– without presence)
ON: Descent actuation with presence (SM1/SM2 open)
OFF: Descent actuation without vehicle presence.

Potentiometer **6** is intended to adjust time frame (warning) before the bollard rises. Time frame can be set on up to 1 minute.



5. OPERATION

5.1. Power on: (when all connections are made))

The bollard rises if the board is programmed on automatic and if safety loops are cleared.

5.2. Power outage:

The bollard retracts underground and rises back when power is back on if the board is programmed on automatic and if safety loops are cleared.

5.3. Operation on a descent request (normal passage):

SW1 = ON and adjustment of warning time frame before bollard rises.
- Descent actuation with presence (SW5=ON)
The descent actuation will only be taken into account if a vehicle is present on presence / safety loop N°1 (SM1/SM2 open)
In this case, the bollard rises once the safety loops have been cleared (SM1/SM2 closed) and after the warning time (if SW3 = ON)
- Descent actuation without presence (SW5=OFF)
The bollard retracts immediately each time it is actuated down and rises once the safety loops have been cleared (SM1/SM2 closed) and after the warning time (if SW3 = ON)

5.4. Operation in manual mode (rise and descent by controller):

SW1= OFF and SW2 = OFF
Input N°7 is where the bollard up and down receives impulses to do so.
An impulse on 7 immediately triggers the bollard down (conditioned by SW5), a second impulse will trigger the bollard back up if no vehicle is present on the safety loops (SM1/SM2 closed) and after the warning time (if SW3 = ON).

SW1 = OFF and SW2 = ON
Input N°7 triggers the bollard down and input N°4 t riggers the bollard up.
An impulse on 7 immediately triggers the bollard down (conditioned by SW5), an impulse on N°4 will trigger the bollard upward if no vehicle is present on the safety loops (SM1/SM2 closed) and after the warning time (if SW3 = ON).

5.5. Operation of emergency stop mode:

The emergency stop button added to the system will trigger the bollard down. As long as it is pushed in, the bollard cannot rise. If the button is released, the bollard remains retracted (down). The bollard needs to be actuated up by remote control to be able to rise again. This operation mode is in compliance with the 'machine directive'

5.6. Operation on a free exit:

Wiring a free exit detector to the system is another way to trigger the bollard down. Bollard will rise again like for a normal drive-through situation.

5.7. Safety during rise:

– Without upper limit switch: securities are active for the 18 seconds' time lapse relay after activation of solenoid valve.
– With upper limit switch: securities are active as long as the upper limit switch is not activated.

As a standard, URBACO bollards are equipped with upper and lower limit switches. It is recommended to have them connected.

5.8. Locking in the upward position:

– Without upper limit switch: after the 18 seconds' time lapse relay from the moment the solenoid valve is activated.
– With upper limit switch: securities are active as long as the upper limit switch is not activated.

As a standard, URBACO bollards are equipped with upper and lower limit switches. It is recommended to have them connected.

5.9. Operation of compressor surveillance:

A dry contact on pressure gauge is used to control time during which compressor is in service. When motor is on, the contact is closed. When the motor stops, the contact opens. As soon as the solenoid valve is actuated, time lapse relay starts. If the compressor turns for 5 minutes, operation is stopped.

5.10. Compressor management:

The compressor works on its own. The 230V mains supply is continuous in normal operation. The pressure gauge built in runs the 'on' and 'off' status of the compressor to maintain air pressure in circuit.

5.11. Loss of upper limit switch while bollard locked upward:

Does not affect system

5.12. Visualisation LEDs:

ST = ON ➔ STOP during rise – OFF ➔ Normal
SM = ON ➔ SAFETY activated – OFF ➔ NORMAL
PROG = Programming of radio beeper
ON = ➔ board powered on

5.13. Negative security / Failsafe:

Negative security (failsafe) is meant to maintain the bollard upward in case of a power outage. This function is not directly managed by the U200 board but this can be done by supplying a counter-valve between 10 and SR; the counter-valve is placed on the normal solenoid valve exhaust.

5.14. Maximum number of bollards

4 x bollards maximum, whatever the size and diameter.
NB: the type of compressor used also determinates the number of bollards (see documentation on compressors).

5.15. Traffic lights indicating bollard status

Red light = steady when the bollard is upward
Flashing when the bollard is in motion.
Amber light = flashing when the bollard is down (retracted)
NB: the lower limit switch is imperative for installations using traffic lights.

5.16. Access default

No default management, except for compressor surveillance.

6. MAINTENANCE

No special maintenance is prescribed for the U200 ; technical checkups are however advisable to control the general state of material (absence of dust, humidity…), operationality of safety equipments (vehicle detection), operationality of control devices (beeper, contactless cards…) and to tighten loose connections inside the case.
These maintenance interventions are to be envisaged by operators depending where the case is located and how often it is used (intensive or non-intensive use).

7. TROUBLE SHOOTING

Nature of problem	Solutions
The power LED for is off	- Check power supply with a controller - Check connections - Check fuses
Radio beepers not active	- Beepers are not programmed or badly so. - No vehicle on loop (according to SWS) - Beeper is out of order - Radio board - Antenna
External control device not active	- Check power and connections. - Check vehicle presence (SW5) - Check programming or/and configuration
The bollard does not rise	- SM1/SM2 open - Time lapse relay for automatic rise is not over - Board is programmed for manual operating (SW2)
The bollard does not rise even when power is on	- Try impulse on N°7 - SM1/SM2 open
Traffic lights are not working correctly	- Check connections of limits switches (they may have been inverted)
Compressor does not start	- Check fuses - Check connections - Check compressor

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AUTOMATIC BOLLARDS

CE

Type: 002ZU200V4

This edition: September 2006

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AUTOMATIC BOLLARDS

USER'S MANUAL
BASIC HORIZONTAL OIL-LUBRICATED MICROCOMPRESSOR
Reference: RCMPBH

THIS MANUAL IS INTENDED FOR TECHNICAL STAFF IN CHARGE OF THE INSTALLATION, THE OPERATION AND THE MAINTENANCE OF THIS PRODUCT

CAUTION!

THIS COMPRESSOR IS NOT DELIVERED READY FOR USE.
THE COMPRESSOR COVER PLUG MUST BE REPLACED BY INLET FILTER
(SEE § INSTALLATION)

CAUTION!
ELECTRICAL SHOCK HAZARD
Do not remove cover from box when power is on

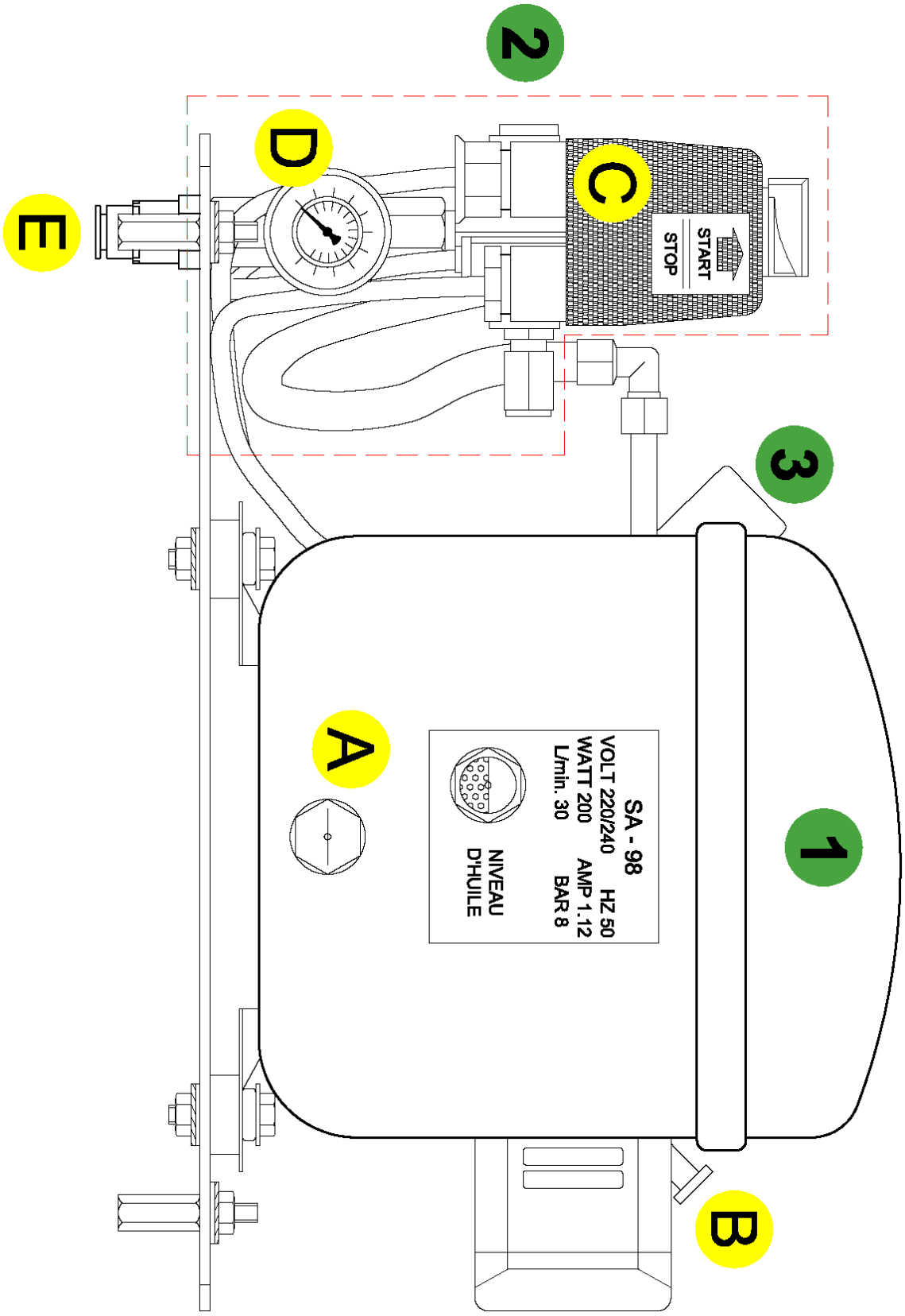
BEWARE OF HOT PARTS!

CAUTION!
KEEP UPRIGHT

OIL SPILLING HAZARD

Pictures are not contractual
NT-RCMPBH(V2-EN) – V2 – 06/06

PRESENTATION OF COMPRESSOR



Keys to the basic horizontal oil-lubricated micro-compressor:

A	Oil level
B	Oil filler plug
C	Pressure switch
D	Pressure gauge
E	Pneumatic connection

SPARE PARTS

1	Complete micro-compressor with oil	1	RCMPBH
3	Inlet (/suction) filter	1	

For spare parts not listed above, please consult Technical Sales Support

DESCRIPTION

GENERAL FEATURES

URBACO's RCMPBH compressor is intended for the supply of compressed air to URBACO's automatic bollards with pneumatic cylinders. Its size and the lightweight materials used make it easy to integrate inside any cabinet.

This compressor presents all control and air circuit elements (pressure gauge, manometer, safety valve, air vent, air filter, etc).

CONDITIONS OF USE

This compressor is intended for non intensive use.

Maximum continuous operation for 15 minutes, followed by 15 minutes' without operation.

SPECIFICATIONS

GENERAL SPECS:

- Micro-compressor, oil-lubricated,
- Horizontal model **(do not turn upside down!),**
- For non intensive use,
- No air reserve,
- No compressor surveillance contact.
- Protection index: IP 44
- Dimensions (L x D x H) : 360 x 250 x 180 mm //14 x 10 x 7 in.
- Weight: 13 kg
- Temperature range for use: 0℃ to +50℃ // +32℉ to +122℉
- Compressor environment:
  - Suitable supply voltage
  - Well sealed ducts
  - Always use in clean, dry and well ventilated area
  - Compressor to be fixed by 4 cross-braces on smooth and stable surface.

ELECTRICAL SPECS:

- Supply voltage: 230V~ 1-phased
- Frequency 50Hz
- Amps: 1.12A
- Motor power: 200W

PNEUMATIC SPECS:

- Flow at 0 bar: 30L/min
- Maximum pressure tolerance: 8 bars (pressure on duty: 5.5 bar)
- Oil type: Mobil RARUS 424
- Oil volume: 480cc

INSTALLATION AND OPERATION

- All micro-compressors **must absolutely be handled horizontally** Do not lay on side to prevent oil spilling and motor deterioration hazard.
- All micro-compressors has been tested and inspected at the factory and supplied in perfect condition. Modifications can be made by qualified technical personnel only.
- Prior to commissioning, ensure that mains voltage and frequency as well as cable ends are suitable for the compressor delivered.
- Fix micro-compressor on the appropriate horizontal stand. Attention! Always maintain compressor upright.
- **Replace cover plug by inlet (/suction) filter (See diagram, N°3).**

- Check oil level (as shown on diagram in A), fill in through port opening (B) up to level mark if necessary.
- Pneumatic connection: (as shown in 3) with a flexible air tube (outer diameter: 10 mm).
- Wiring: (as shown in E), with mandatory 30Ma ground fault circuit interrupter (GFCI) and 5 Amp aM fuse protection (temporised motor drive).
- Turn compressor on and check duty pressure on pressure gauge (D). It must be set on 5.5 bar. If necessary, set pressure by turning pressure switch clockwise or anti-clockwise (as shown in C).

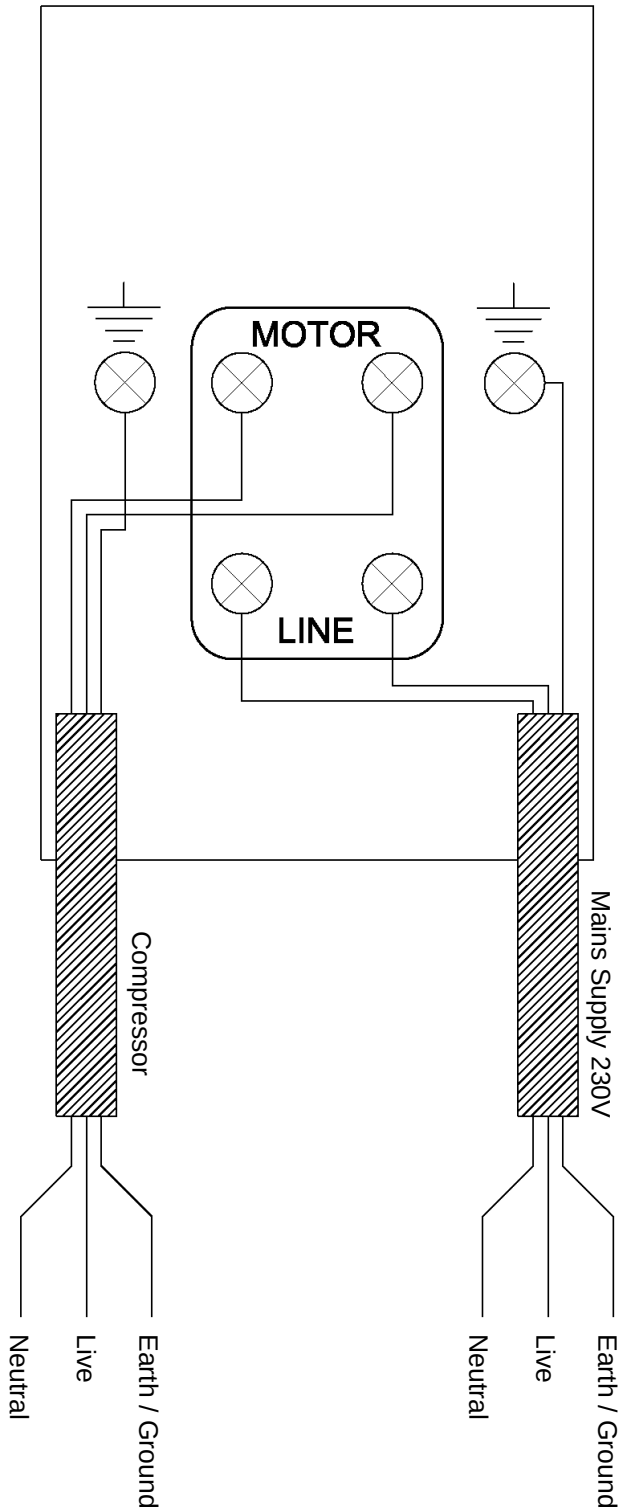
COMPRESSOR MAINTENANCE SCHEDULE

Check-point	Control and maintenance	1st month	2nd month	3rd month	4th month	5th month	6th month	7th month	8th month	9th month	10th month	11th month	12th month
1	Check pressure gauge		X		X		X		X		X		X
2	Check motor fixings												X
3	Check compressor fixings												X
4	Check pressure switch		X		X		X		X		X		X
5	Check air filter		X		X		X		X		X		
6	Replace air filter												X
7	Check oil level		X		X		X		X		X		X
8	Change oil												X
9	Check for potential air leaks		X		X		X		X		X		X

FIRST DEGREE TROUBLE SHOOTER

Fault	**Explanations / Solutions**
The compressor will not start	Check 220V supply Check fuse
The compressor runs but pressure does not rise	Check that anti-return valve is not blocked (which is the most common explanation) Check that inlet (/suction) filter is not blocked. Check for leak on connections The piston may be worn.
Power is on, but the compressor will not start and makes a humming.	Temperature is below 0℃ Air vent may be faulty.
Power is on but the compressor will not start or no longer stops when maximum pressure is reached	Check pressure gauge and replace if faulty.

WIRING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Mains Supply 230V
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AUTOMATIC BOLLARDS

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Type: RCMPBH

This Edition: June 2006

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